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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,878	11/02/2001	William R. Harshbarger	AMAT/827 - C 01	4040
32588	7590	02/25/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			PERALTA, GINETTE	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/052,878

Applicant(s)

HARSHBARGER ET AL.

Examiner

Ginette Peralta

Art Unit

2814

AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 42-50, 109 and 110 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42-50, 109 and 110 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the claim the phrase "the conductivity-decreasing volatile consists of methane" is found indefinite, since claim 46 depends on claim 42, and in claim 42 it was established that it should consist of methane and at least one other volatile as the claim language recites a "conductivity-decreasing volatile including two or more components".

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 42-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (JP 59197127 A).

Yamazaki discloses in the abstract and in the translation an electronic device having a substrate fabricated by using a silicon-based volatile, a conductivity-increasing volatile including one or more components for increasing the conductivity of the amorphous silicon-based film, and a conductivity decreasing volatile including two or more components for decreasing the conductivity of the amorphous silicon based film; wherein the conductivity-decreasing volatile consists of ammonia and methane.

Yamazaki discloses the claimed invention with the exception of the gases flow rate ratios used in forming the device, but the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. Furthermore, the presence of process limitations in product claims, which product does not otherwise patentably distinguish over prior art, cannot impart patentability to the product. See MPEP 2113. *In re Stephens*, 145 USPQ 656 (CCPA 1965). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a certain flow rate ratio, as there is no statement denoting the criticality of the flow rate ratios. "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.)" (MPEP 2144.04)

Regarding the recitation that the amorphous silicon based film has a tensile stress of between about  $10^8$  and  $10^9$  dyne/cm<sup>2</sup> has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim

following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

5. Claims 109-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claims 42-50 above, and further in view of Applicant's admitted prior art.

Yamazaki discloses an electronic device that comprises an amorphous silicon based film formed using a silicon-based volatile, a conductivity increasing volatile, and a conductivity decreasing volatile.

Yamazaki discloses the claimed invention with the exception of specifying the type of device.

Applicant's admitted prior art teaches that amorphous silicon based films are conventionally used for field emission devices and flat panel display devices for the disclosed intended purpose of overcoming the limitations of liquid crystal display devices, furthermore it discloses that it is desirable to deposit an amorphous silicon based film that has electrical conductivity in an intermediate range between that of intrinsic amorphous silicon and  $n^+$  doped amorphous silicon.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electronic device for field emission devices and flat panel display devices for the disclosed intended purpose of overcoming the limitations of liquid crystal display devices, furthermore to deposit an amorphous silicon based

film that has electrical conductivity in an intermediate range between that of intrinsic amorphous silicon and  $n^+$  doped amorphous silicon is desirable in the art for the disclosed intended purpose of Yamazaki of extending the life of the carriers, reducing the generation of interface states that are the cause of bond failure and crystalline defects that result in an improved field emission device.

*Response to Arguments*

6. Applicant's arguments filed 11/17/03 have been fully considered but they are not persuasive.

With regards to applicant's argument that the Examiner has no basis for finding that the art of record teaches, shows, or suggests introducing a silicon-based volatile into the deposition chamber, introducing into the deposition chamber a conductivity-increasing volatile including one or more components for increasing the conductivity of the amorphous silicon-based film, and introducing into the deposition chamber a conductivity-decreasing volatile including two or more components for decreasing the conductivity of the amorphous silicon-based film, it is noted that in page 5 of the translation of Yamazaki it is provided support for the Examiner's original presentation that Yamazaki discloses a conductivity-decreasing volatile including two or more components as noted in line 9, where it reads: "carbide, nitride and oxide gases such as methane, ammonia and oxygen were added".

*Conclusion*

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (571) 272-1713. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

GP

  
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